The mission of the amfAR Institute for HIV Cure Research is to harness the innate and adaptive immune response to reverse latency, reduce the reservoir, and control what’s left.
amfAR HIV Cure Institute Model

The problem of “curing” HIV disease is too big - and may take too long - to solve with traditional academic model

amfAR Institute:
- Many scientists
- Several industry partners
- Multiple disciplines
- Assembled into effective teams
- Milestone driven
Our Affiliates and Partners
The Goal of a Cure

- Allow an HIV-infected person to live a full life without having to take medicines, worry about transmitting the virus, or suffer any complications from HIV.

- “Sterilizing” cure: Completely eliminate every HIV infected cell from the body.

- “Functional” cure: Dramatically reduce the number of HIV infected cells and “beef-up” the body’s natural immune system to enable it to keep the remaining reservoir under control. Comparable to elite controllers.
4 Scientific Barriers to a Cure

Chart the locations of reservoirs
Understand how reservoirs are established and persist
Record the amount of virus in reservoirs
Eliminate reservoirs
The Key Science Team

Paul Volberding  Peter Hunt  Warner Greene  Satish Pillai  Steve Deeks

Rowena Johnston  Afam Oyoke  Teri Liegler  Jeff Milush  Lynda Dee
Our strategy was initially inspired by evidence that an immune booster, a “toll-like receptor” (TLR) stimulator could activate HIV in the latent reservoir.
A single cell containing latent HIV can trigger viral rebound.

Unless full eradication is achieved a durable method to “control” residual HIV will be needed.
The combination of a TLR stimulator and the vaccine was better able to reduce viral load after treatment discontinuation. A model we plan to explore.

Borducci et al Nature 2016
Programs

TLR Biology

- How effective are these drugs in reversing latency in the HIV reservoir?
- Can they be used in combination?
Programs

Measuring TLR Stimulator Activity in Humans

• Can the impact of TLR stimulators in reducing the HIV reservoir in tissues as opposed to circulating blood be measured?
• Do the cellular reservoirs that stay in these tissues respond differently to TLR stimulators than the reservoir cells in the blood?
• Can highly sensitive tests be used to measure the dangerous form of HIV that can grow actively and spread to other cells?
Programs

Measuring the reservoir

• Can the effect of TLR stimulators on tissue reservoirs be actually visualized by using radioactive tags combined with imaging methods like MRI scanning?
Programs

Measuring the reservoir

• Can we show that any of these treatments and reservoir measurements predict how long HIV takes to relapse once HIV medications are stopped? The step towards a cure!

• We will conduct a trial of “analytic treatment interruption” (ATI) involving 30 participants (including 10 women) in which treatment will be stopped until HIV relapse occurs.
Programs

Measuring TLR stimulator activity in primates and humans

• Should various TLR stimulators be used alone or will combinations of different ones be more effective or less toxic?
• How are they best administered, orally or by injection, either under the skin or intravenously?
Combination strategies will likely be needed to achieve a durable remission.

The amfAR Institute research leverages and complements work ongoing within DARE, the ACTG, the cancer networks, and industry.
UCSF Mission Hall

amfAR Institute for HIV Cure Research Home

Location of HIV research programs, including ARI, Center for AIDS Prevention Sciences, Pacific AIDS Education and Training Center, Global Health Sciences